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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,225	11/03/2003	Michiel van Nieuwstadt	81088302	3076

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FORD GLOBAL TECHNOLOGIES, LLC.  
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DEARBORN, MI 48126

EXAMINER

NGUYEN, TU MINH

ART UNIT PAPER NUMBER

3748

DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/700,225

Applicant(s)

NIEUWSTADT, MICHEL VAN

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 15-21 and 24 is/are rejected.
- 7) ☒ Claim(s) 13, 14, 22 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>110303</u> | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because in each of Figures 1A and 1B, numeral "104" must be pointed to the I/O ports; and the signal line FPW must have an arrow pointing to the fuel injector (80). Correction is required.

### ***Claim Objections***

2. Claims 3 and 18 are objected to because:
  - Claim 3, line 1 of the claim, "froth" should read --forth--.
  - Claim 18, line 1 of the claim, "13" should probably read --17--.Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-8, 10, and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Khair et al. (U.S. Patent 6,615,580).

Re claims 1 and 15, as shown in Figure 4, Khair et al. disclose a diagnostic system and a diagnostic method for an exhaust gas aftertreatment system coupled downstream of an internal combustion engine (420), the system comprising:

- an emission control system comprising at least a particulate filter (410b), the emission control system coupled downstream of an internal combustion engine;
- a sensor (433) providing a signal indicative of an exhaust gas pressure upstream of the emission control system; and
- a computer storage medium (422) having a computer program encoded therein, comprising code for estimating a pressure drop across the particulate filter based on at least the sensor signal (lines 54-57 of column 8).

Re claims 2 and 16, in the diagnostic system and method of Khair et al., the internal combustion engine is a diesel engine.

Re claim 3, in the diagnostic system of Khair et al., the sensor (433) is an absolute pressure sensor.

Re claims 4 and 17, in the diagnostic system and method of Khair et al., the emission control system further comprises an oxidation catalyst (410a) coupled upstream of the particulate filter.

Re claims 5-7 and 18, in the diagnostic system and method of Khair et al., the emission control system further comprises a Lean NO<sub>x</sub> Trap (LNT) (411) coupled downstream of the particulate filter.

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Re claim 8, in the diagnostic system of Khair et al., the LNT is coupled upstream of the particulate filter (see Figure 1).

Re claim 10, in the diagnostic system of Khair et al., the computer storage medium further comprises code for providing an indication that particulate filter regeneration is required based on sad estimated pressure drop across the particulate filter (lines 54-67 of column 8).

5. Claims 1, 2, 4, 10-12, 15-17, and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Boretto et al. (U.S. Patent Application 2003/0167757).

Re claims 1 and 15, as shown in Figure 1, Boretto et al. disclose a diagnostic system and a diagnostic method for an exhaust gas aftertreatment system coupled downstream of an internal combustion engine (2), the system comprising:

- an emission control system comprising at least a particulate filter (9), the emission control system coupled downstream of an internal combustion engine;
- a sensor (13) providing a signal indicative of an exhaust gas pressure upstream of the emission control system; and
- a computer storage medium (11) having a computer program encoded therein, comprising code for estimating a pressure drop ( $\Delta P_{DPF}$ ) across the particulate filter based on at least the sensor signal (see equation (2) in paragraph 0056).

Re claims 2 and 16, in the diagnostic system and method of Boretto et al., the internal combustion engine is a diesel engine.

Re claims 4 and 17, in the diagnostic system and method of Boretto et al., the emission control system further comprises an oxidation catalyst (10) coupled upstream of the particulate filter.

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Re claims 10, in the diagnostic system of Boretto et al., the computer storage medium further comprises code for providing an indication that particulate filter regeneration is required based on sad estimated pressure drop across the particulate filter (see the Abstract).

Re claims 11 and 19, in the diagnostic system and method of Boretto et al., the estimating of the pressure drop across the filter is further based on an atmospheric pressure ( $P_{atm}$ ) (see equation (2)).

Re claim 20, in the method of Boretto et al., the estimating is further based on mass airflow ( $Q_m$ ) (see equation (2)).

Re claims 12 and 21, in the diagnostic system and method of Boretto et al., the estimating of the pressure drop across the filter is further based on a model of a pressure drop across the oxidation catalyst (see paragraph 0063).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al. as applied to claim 5 above, in view of design choice.

The system of Khair et al. discloses the invention as cited above, however, fails to disclose that the NO<sub>x</sub> aftertreatment device is a urea-based SCR catalyst.

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With regard to applicants claim directed to a urea-based SCR catalyst as the NOx aftertreatment device, the specification of such would have been an obvious matter of design choice well within the level of ordinary skill in the art depending on design variables, such as the desired operational temperature range of the catalyst, availability of reductants, etc. Moreover, there is nothing in the record which establishes that the specification of such presents a novel or unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boretto et al. in view of Maaseidvaag et al. (U.S. Patent 6,167,696).

As illustrated in Figure 1, Boretto et al. disclose an emission control system for a diesel engine (2), comprising:

- an oxidation catalyst (10) coupled downstream of the engine;
- a particulate filter (9) coupled downstream of the oxidation catalyst; and
- a computer (11) providing an indication that particulate filter regeneration is required based at least on a measurement of an exhaust gas pressure (by utilizing pressure sensor (13)) upstream of the oxidation catalyst, the computer further regenerating the particulate filter in response to the indication (see the Abstract).

Boretto et al., however, fail to disclose that the system further comprises a lean NOx trap coupled downstream of the particulate filter.

As shown in Figures 1 and 4 and indicated on lines 30-38 of column 6, Maaseidvaag et al. teach that it is conventional in the art to use a NOx trap (22) having a monolithic structure that includes an integral particulate filter to trap soot in the exhaust gas. The downstream wall (42) of the NOx trap has a wash coat (54) carrying a noble metal (platinum) as an oxidation catalyst

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and an alkali metal (potassium or lithium) as a NO<sub>x</sub> adsorbent. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have replaced the filter of Boretto et al. with the NO<sub>x</sub> trap taught by Maaseidvaag et al., since the application thereof would have also reduced harmful NO<sub>x</sub> emission in the exhaust gas.

***Allowable Subject Matter***

9. Claims 13, 14, 22, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Prior Art***

10. The IDS (PTO-1449) filed on November 3, 2003 has been considered. An initialized copy is attached hereto.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of seven patents: Tokura (U.S. Patent 4,424,671), Usui et al. (U.S. Patent 4,549,399), Nomoto et al. (U.S. Patent 4,665,690), Fuchs et al. (U.S. Patent 5,373,733), Abe et al. (U.S. Patent 6,023,930), Hirota et al. (U.S. Patent 6,233,927), and Asano et al. (Japan Publication 57-148016) further disclose a state of the art.

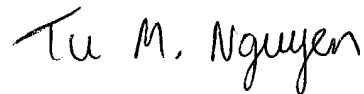
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*Communication*

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.



TMN

Tu M. Nguyen

June 13, 2004

Patent Examiner

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